

Appl. No. 10/030,238

Amdt. dated July 1, 2004

Reply to Office action of March 1, 2004

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-14 remain in the application. Claims 1 and 8 have been amended. More specifically, the independent claims have been amended by emphasizing the fact that the results of the investigations concerning the product data and the production data, and the correlation rules, are utilized as a feedback into the production process. We will return to this point in the following discussion of the prior art.

The added language is clearly supported in the original specification. Reference is had, for example, to page 3, lines 12-15 ("achieve immediate feedback to the production process for controlling the parameters responsible for specific deviation in quality") and to page 4, middle, ("the process parameters can be set in accordance with the established rules and their interpretation in the form of suitable control signals to achieve a desired quality"). These two passages, among others, provide a description of the feedback to the production process.

We now turn to the art rejections. Claims 1-3, 8-10, 13, and 14 have been rejected as being obvious over the combined teachings of Kellams et al. (US 5,854,749, "Kellams") and

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Kuttner et al. (US 6,044,895, "Kuttner") under 35 U.S.C. §
103. We respectfully traverse.

The primary reference to Kellams describes a system for
monitoring a continuous steel casting process. The result of
the process are cast blooms. Kellams continuously monitors
many physical parameters during the process and stores them in
a database.

Various parameters of the steel casting process are
monitored in real time and transmitted by the local
area network 100.

Kellams, col. 4, lines 32-34.

A storage device stores data representations of the
parameters as they are monitored by the plurality of
sensors The logic processor includes a
mathematical parser for evaluating the logic
relations between parameters and converting the logic
relations to processor instructions used to evaluate
the data representations of the parameters for
defects.

Kellams, Abstract.

From these physical parameters that are recorded during
production, Kellam detects defects by performing certain
weighting and logical operations on the data. This is done by
creating logical relationships between the stored data (col.
4, lines 41-43). The patent further discloses, as an example,
that such a logical relationship can simply be a comparison
operation between two levels of mold measured by a sensor at a

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specific point at two different times. Col. 5, lines 3-37. These operator-defined expressions, that merely comprise a definition of defects to be measured are transferred by a processor into predetermined program functions, upon which certain embedded SQL functions are called (col. 5, lines 38-44) and applied to the data.

This brings us to an intermediate comparison: The claimed invention is based on relationships - or rules according to the claim language - which relate product data (i.e., data characterizing the finished product) and production data (i.e., data characterizing the production of the product). This means that, according to the present invention, product data are related to or correlated with production data that characterize the production properties.

Upon comparing the invention to the Kellams teaching, it becomes immediately evident that the prior art reference but covers a very small portion of claim 1. Specifically, Kellams only teaches how to relate production data to detect defects of the steel. The defect of the steel is simply stored in a database for later recall. The claimed invention, on the other hand, defines how to correlate data of the finished product (e.g., surface defects) with the production parameters in order to change the production parameters, if and when surface

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defects are detected that tend to show that certain surface defects in the product data depend on specific production data.

Kellams does not disclose such a correlation between the finished product and the production parameters that would allow the production parameters to be changed so as to achieve a specific quality level of the finished product. Quite in contrast, Kellams merely stores the gathered data and uses it to describe defects of the steel:

If any of the one or more logical relationships created by the operator is satisfied, data in a production database is modified to describe a segment of steel that is being cast.

Kellams, col. 4, lines 47-50 (emphasis added).

Thus, the defect becomes a part of the data record for a particular bloom and this data can be looked up as easily as the length or the customer id of that bloom.

Kellams, col. 5, lines 55-57.

The secondary reference to Kuttner follows a different route. There, each of the various units in the casting and rolling system is a self-contained self-controlled unit.

Each of the casting devices, the first device, the second device, the horizontally working rolling mill and the reel device are controlled by respective individual closed-loop control systems.

Kuttner, Abstract.

These individual systems are linked by an overarching system control unit. Kuttner explains:

The individual automation and measurement devices are organized especially in automation groups based on the technology and they are linked together by a feed-forward-feedback control system.

Kuttner, col. 3, lines 9-12 (emphasis added).

Kuttner is concerned with a central control system in which the individual units are controlled with respect to their influence on downstream units. That is, the central control system monitors the influence of control step activity of a given upstream unit on the behavior of a downstream unit.

Kuttner, therefore, also lacks a teaching towards processing production data and product data (i.e., classes and positions of surface features) and deriving therefrom correlations that may exist between them. Further, Kuttner does not as much as hint towards rules as to how the product data may depend on production data.

Neither Kellams nor Kuttner disclose a hint that such a feedback to the production parameters could be advantageous. As this central feature of the present invention is not even suggested by the combined teachings of the references, the

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claimed invention as it is defined in claim 1 is non-obvious and patentable over Kellams in view of Kuttner.

The same holds true for the independent claim 8. Neither reference discloses a visual display unit from which the established correlations between product data and production data can be read so that the production parameters can be set in accordance with the desired product quality.

Furthermore, neither reference, whether alone or in combination, provides any detail concerning the establishment of a surface map and the required classification of the surface features by type, by size, and/or by frequency, and utilizing the thus-derived results as product data.

The additional reference Kulkarni et al. (US 5,991,699, "Kulkarni") has been reviewed as well. While the citation of the reference in the context of claims 4-7, 11, and 12 is appreciated, Kulkarni does not make up for the shortcomings of the primary combination proffered by the Examiner. The combined teachings of Kellams, Kuttner, and Kulkarni do not render either claims 1 or 8 unpatentable.

In summary, none of the references, whether taken alone or in any combination, either show or suggest the features of claims

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1 or 8. These claims are, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent thereon, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-14 are solicited.

Petition for extension is herewith made. The extension fee for response within a period of one month pursuant to Section 1.136(a) in the amount of \$110.00 in accordance with Section 1.17 is enclosed herewith.

Please charge any other fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



For Applicants

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July 1, 2004

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